IN THE CLAIMS

1. (currently amended) Membrane for tangential filtration of a fluid to be treated, said membrane comprising:

a porous support (2) having an inner surface 4; and

at least one separator layer (5) coated on the inner surface (4) of the porous support, the separator layer (5) defining at least one flow channel (3) for fluid to be treated having an inlet (6) and an outlet (7), the fluid flowing in a given direction (f) from the inlet (6) to the outlet (7), wherein a permeate as a fraction of the fluid being treated passes through the separator layer (5) and the porous support (2);

wherein the porous support (2) has a variable, partial pore-filling (c) that uses inorganic particles and extends into the porous support (2) beginning at the inner surface (4) of the porous support (2) that is in contact with the separator layer (5); and

further wherein the variable, partial pore-filling (c) in a portion (8) of the porous support (2) of given constant thickness creates a mean porosity gradient in the direction of flow of the fluid to be treated, participates with the separator layer (5) in membrane permeability, and produces a minimum mean porosity located at the inlet (6) and a maximum mean porosity located at the outlet (7).

~~delimiting at least one flow channel (3) for the fluid to be treated flowing in a given direction(f) between an inlet (6) and an outlet (7), the inner surface (4) of the porous support (2) which delimits channel (3) being coated with at least one separator layer (5) for the fluid to be treated, a fraction called a permeate passing through the separator layer (5) and the porous support (2), characterized in that the support has variable, partial pore-filling (c) extending from each inner surface (4) of support (2) on which the separator layer (5) is deposited, and obtained with inorganic particles, this said partial pore-filling, on a portion (8) of support (2) of a given constant thickness (e) extending from the inner surface (4) of support (2), creating a mean porosity gradient in the direction of flow of the fluid to be treated, the minimum mean porosity being located at the inlet(6) and the maximum mean porosity at the outlet (7)~~.

2. (original) Membrane as in claim 1, characterized in that the variable partial pore-filling (c) on portion (8) of support (2) of given thickness (e) extending from the inner surface (4) of support

(2), creates a flux density gradient per unit of pressure in the direction of flow of the fluid to be treated, the minimum flux density per unit of pressure being located at the inlet (6) and the maximum flux density per unit of pressure at the outlet (7).

3. (original) Membrane as in claim 1, characterized in that the mean porosity of the support (2) increases inside the support in a direction that is transverse to the direction of flow of the fluid to be treated, between the inner surface (4) and the outer surface (2_1) of support (2).

4. (previously presented) Membrane as in claim 1, characterized in that the variable, partial pore-filling (c) of portion (8) is made over a depth (p), from the inner surface (4) of the support (2), which decreases in the direction of flow (f) of the fluid to be treated between the inlet (6) and the outlet (7).

5. canceled

6. (previously presented) Membrane as in claim 1, characterized on that the variable, partial pore-filling (c) of portion (8) is obtained by the penetration, from inner surface (4) of support (2), of inorganic particles whose mean diameter is smaller than the mean pore diameter dp of the support (2).

7. (original) Membrane as in claim 6, characterized in that the penetration of inorganic particles is followed by sintering.

8. (previously presented) Membrane as in claim 1, characterized in that portion (8) of constant thickness (e) has a mean porosity which increases in a substantially continuous manner in the direction of flow (f) of the fluid to be treated, between inlet (6) and outlet (7), so as to obtain a substantially constant permeate flow rate along the length of the flow channel (3).

9. (previously presented) Membrane as in claim 1, characterized in that portion (8) of constant thickness (e) has a mean porosity which increases in plateaus (P_i) in the direction of flow (f) of

the fluid to be treated, between the inlet (6) and the outlet (7), the length of said plateaus taken in the direction of flow (f) preferably being substantially identical.

10. (withdrawn) Method for fabricating a membrane for the tangential filtration of a fluid to be treated, comprising a porous support (2) delimiting at least one flow channel (3) for the fluid to be treated flowing in a given direction (f) between an inlet (6) and an outlet (7), the inner surface (4) of the porous support (2) which delimits the channel (3) being coated with at least one separator layer (5) for the fluid to be treated,
characterized in that it comprises a step consisting of modifying the porous support (2) by the penetration, from the inner surface (4) of porous support (2) delimiting channel (3), of inorganic particles whose mean diameter is smaller than the mean pore diameter dp of the support (2), so that on a portion (8) of a given constant thickness (e) extending from the inner surface (4) of support (2), it is possible to obtain a mean porosity gradient in the direction of flow of the fluid to be treated, the minimum mean porosity being located at the inlet (6) and the maximum mean porosity at the outlet (7).

11. (withdrawn) Method as in claim 10, characterized in that the step consisting of modifying the porous support (2) by penetration is followed by a sintering step.

12. (withdrawn) Method as in claim 10 characterized in that the value of the mean porosity gradient of portion (8) is chosen in relation to the value of the pressure gradient of the fluid to be treated flowing in channel (3), in order to obtain a permeate flow rate that is substantially constant along the length of the flow channel (3).

13. (withdrawn) Method as in claim 10, characterized in that the mean diameter of the inorganic particles lies between dp/100 and dp/2.

14. (withdrawn) Method as in claim 10, characterized in that penetration is made so that the inorganic particles penetrate inside the pores of portion (8) over a depth (p), from the inner surface (4) of support (2) on which the separator layer (5) is deposited, which decreases in the direction of flow (f) of the fluid to be treated between the inlet (6) and the outlet (7).

15. (withdrawn) Method as in claim 14, characterized in that it consists of ensuring the penetration of inorganic particles from the inner surface (4) of the porous support (2):

- by arranging the porous support (2) vertically, the lower end of the support corresponding to the inlet (6) and the upper end of the support to the outlet (7),
- by filling channel (3) with a deflocculated suspension of inorganic particles,
- and by emptying channel (3) progressively, with a view to obtaining a contact time Tc, between the suspension of inorganic particles and the inner surface (4) of the support (3), which increases progressively in order to obtain a penetration depth (p), from the inner surface (4) of support (2), which decreases in the direction of flow (f) of the fluid to be treated between the inlet (6) and the outlet (7), i.e. between the lower end and the upper end of the porous support (2).

16. (withdrawn) Method as in claim 15, characterized in that the mean porosity gradient on portion (8) of given constant thickness (e) is obtained by successive penetrations of a first series of inorganic particles whose mean diameter d_1 lies between dp/100 and dp/2, then of a second series of inorganic particles whose mean diameter d_2 lies between $d_1/100$ and $d_1/2$.

17. (withdrawn) Method as in claim 10, characterized in that, simultaneously with penetration, organic particles are deposited on the inner surface (4) of the support, this deposit after sintering forming the separator layer (5).